

Contributions to **Mineralogy and Petrology**

Volume 85 1984

Executive Editors: I.S.E. Carmichael J. Hoefs

Editorial Board:

R. Binns	North Ryde, Australia
H.P. Eugster	Baltimore, Maryland
B.W. Evans	Seattle, Washington
W.S. Fyfe	London, Ontario
I. Parsons	Aberdeen, Scotland
Z.E. Peterman	Lakewood, Colorado
W. Schreyer	Bochum-Querenburg, F.R.G.
J. Touret	Amsterdam, The Netherlands
V. Trommsdorff	Zürich, Switzerland
K.H. Wedepohl	Göttingen, F.R.G.



Springer International

Contributions to Mineralogy and Petrology

Founded in 1947 by O.H. Erdmannsdörffer. Volume 1 (1949) edited by O.H. Erdmannsdörffer as "Heidelberger Beiträge zur Mineralogie und Petrographie". Continued from Volume 6 (1957) as "Beiträge zur Mineralogie und Petrographie", edited by C.W. Correns. From Volume 12 (1966) to Volume 40 (1973) published as "Contributions to Mineralogy and Petrology/Beiträge zur Mineralogie und Petrologie", edited by C.W. Correns. Beginning with Volume 41 (1973) "Contributions to Mineralogy and Petrology". As of Volume 43 (1974) edited by C.W. Correns and I.S.E. Carmichael. As of Volume 74 (1980) edited by I.S.E. Carmichael and J. Hoefs.

Submission of a manuscript implies that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review or thesis), that it is not under consideration for publication elsewhere, that its publication has been approved by all the authors and by the responsible authorities – tacitly or explicitly – in the institutes where the work was carried out and that, if accepted, it will not be published elsewhere in the same form, in either the same or another language, without the consent of the copyright holders. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, electronic data base, video disks, microform or any other reproductions of similar nature, and translations.

Photographic reproduction, microform, electronic data base, video disks, or any other reproduction of text, figures, or tables from this journal is prohibited without permission obtained from the publisher.

The use of general descriptive names, trade names, trade marks, etc., in this publication, even if the former are not specifically identified, is not to be interpreted as exempt from the relevant protective laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of going to press, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special Regulations for the USA

Photocopies may be made for personal or internal use beyond that permitted by Section 107 or 108 of the U.S. Copyright Law, provided a fee is paid. This fee is \$0.20 per page or a minimum of \$1.00 if an article consists of less than five pages. Please pay this fee to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0010-7999, volume, and first and last page numbers of each article copied.

The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

Other Regulations

Authors of this journal can benefit from library and photocopy fees collected by VG WORT if certain conditions are met. If an author lives in the Federal Republic of Germany or in West Berlin it is recommended that he contact Verwertungsgesellschaft WORT, Abteilung Wissenschaft, Goethestraße 49, D-8000 München 2, for detailed information.

Printers: Universitätsdruckerei H. Stürtz AG Würzburg

© Springer-Verlag GmbH & Co. KG Berlin Heidelberg 1984
Printed in Germany

Contents

Subject-Index	V	Gasparik, T., Newton, R.C.: The reversed alumina contents of orthopyroxene in equilibrium with spinel and forsterite in the system $MgO-Al_2O_3-SiO_2$	186
List of Locations	VIII	Girardeau, J., s. Mercier, J.-C.C. et al.	391
Angel, R.J.: The experimental determination of the johannsenite-bustamite equilibrium inversion boundary	272	Groot, P.A. de, s. Baker, J.H.	102
Aragon, R., McCallister, R.H., Harrison, H.R.: Cation diffusion in titanomagnetites	174	Gust, D.A., s. Arculus, R.J. et al.	85
Arculus, R.J., Dawson, J.B., Mitchell, R.H., Gust, D.A., Holmes, R.D.: Oxidation states of the upper mantle recorded by megacryst ilmenite in kimberlite and type A and B spinel lherzolites	85	Haack, U., Heinrichs, H., Boneß, M., Schneider, A.: Loss of metals from pelites during regional metamorphism	116
Bacon, C.R., Kurasawa, H., Delevaux, M.H., Kistler, R.W., Doe, B.R.: Lead and strontium isotopic evidence for crustal interaction and compositional zonation in the source regions of Pleistocene basaltic and rhyolitic magmas of the Coso volcanic field, California	366	Hajash, A. Jr.: Rare earth element abundances and distribution patterns in hydrothermally altered basalts: experimental results	409
Bacon, C.R., Metz, J.: Magmatic inclusions in rhyolites, contaminated basalts, and compositional zonation beneath the Coso volcanic field, California	346	Harley, S.L., s. Black, L.D. et al.	141
Baker, J.H., Groot, P.A. de: Proterozoic seawater-felsic volcanics interaction W. Bergslagen, Sweden. Evidence for high REE mobility and implications for 1.8 Ga seawater compositions	102	Harrison, H.R., s. Aragon, R. et al.	174
Beccaluva, L., Ohnenstetter, D., Ohnenstetter, M., Paupy, A.: Two magmatic series with island arc affinities within the Vourinos ophiolite	253	Hart, S.R., s. Roden, M.K. et al.	376
Benoit, V., s. Mercier, J.-C.C. et al.	391	Heinrichs, H., s. Haack, U. et al.	116
Bergman, S.C., Dubessy, J.: CO_2 -CO fluid inclusions in a composite peridotite xenolith: implications for upper mantle oxygen fugacity	1	Helmstaedt, H. s. Trzcinski, W.E. et al.	311
Black, L.P., Fitzgerald, J.D., Harley, S.L.: Pb isotopic composition, colour, and microstructure of monazites from a polymetamorphic in Antarctica	141	Holmes, R.D., s. Arculus, R.J. et al.	85
Boneß, M., s. Haack, U. et al.	116	Huppert, H.E., s. Sparks, R.S.J.	300
Burnham, C.W., s. Eggler, D.H.	58	Iyer, S.S., Choudhuri, A., Vasconcellos, M.B.A., Cordani, U.G.: Radioactive element distribution in the Archean granulite terrane of Jequié-Bahia, Brazil	95
Carmichael, D.M., s. Trzcinski, W.E. et al.	311	Jahn, B., Zhang, Z.: Archean granulite gneisses from eastern Hebei Province, China: rare earth geochemistry and tectonic implications	224
Carmichael, I.S.E., s. Nelson, S.A.	321	Jurewicz, S.R., Watson, E.B.: Distribution of partial melt in a felsic system: the importance of surface energy	25
Carmichael, I.S.E., s. Sack, R.O.	103	Kistler, R.W., s. Bacon, C.R. et al.	366
Casey, J.F., s. Elthon, D.	197	Kurasawa, H., s. Bacon, C.R. et al.	366
Chatterjee, N.D., Warhus, U.: Ephesite, $Na(LiAl_2)[Al_2Si_2O_{10}](OH)_2$: II. Thermodynamic analysis of its stability and compatibility relations, and its geological occurrences	80	Lucchetti, G., s. Cortesogno, L. et al.	14
Chatterjee, N.D., s. Warhus, U.	74	Martin, H., Querré, G.: A 2.5 Ga. reworked sialic crust: Rb-Sr ages and isotopic geochemistry of late Archean volcanic and plutonic rocks from E. Finland	292
Choudhuri, A., s. Iyer, S.S. et al.	95	Matthews, A., s. Reymer, A.P.S. et al.	336
Claesson, S., Pallister, J.S., Tatsumoto, M.: Samarium-neodymium data on two late Proterozoic ophiolites of Saudi Arabia and implications for crustal and mantle evolution	244	McCallister, R.H., s. Aragon, R. et al.	174
Cordani, U.G., s. Iyer, S.S. et al.	95	Melson, W.G., s. Roden, M.K. et al.	376
Cortesogno, L., Lucchetti, G., Spadea, P.: Pumpellyite in low-grade metamorphic rocks from Ligurian and Lucanian Apennines Maritime Alps and Calabria (Italy)	14	Mercier, J.-C.C., Benoit, V., Girardeau, J.: Equilibrium state of diopside-bearing harzburgites from ophiolites: geobarometric and geodynamic implications	391
Dawson, J.B., s. Arculus, R.J. et al.	85	Metz, J., s. Bacon, C.R.	346
Delevaux, M.H., s. Bacon, C.R. et al.	366	Mitchell, R.H., s. Arculus, R.J. et al.	85
DeLong, S.E., s. Walker, D.	203	Munksgaard, N.C., Zeck, H.P.: Oxygen-isotope systematics of a strongly recrystallized granitic rock complex, Grenvillian Belt, SW Sweden	67
Deutsch, A.: Young Alpine dykes south of the Tauern Window (Austria): a K-Ar and Sr isotope study	45	Navon, O., s. Reymer, A.P.S. et al.	336
Doe, B.R., s. Bacon, C.R. et al.	366	Nelson, S.A., Carmichael, I.S.E.: Pleistocene to recent alkalic volcanism in the region of Sanganguey volcano, Nayarit, Mexico	321
Dubessy, J., s. Bergman, S.C.	1	Neumann, E.-R., Schilling, J.-G.: Petrology of basalts from the Mohs-Knipovich Ridge, the Norwegian-Greenland Sea	209
Eggler, D.H., Burnham, C.W.: Solution of H_2O in diopside melts: a thermodynamic model	58	Newton, R.C., s. Gasparik, T.	186
Elthon, D., Casey, J.F.: Comment on "Soret separation of mid-ocean ridge basalt magma" by D. Walker and S.E. DeLong	197	Ohnenstetter, D., s. Beccaluva, L. et al.	253
Essene, E.J., s. Treiman, A.H.	149	Ohnenstetter, M., s. Beccaluva, L. et al.	253
Fitzgerald, J.D., s. Black, L.D. et al.	141	Olsen, S.N.: Mass-balance and mass-transfer in migmatites from the Colorado Front Range	30
Frey, F.A., s. Roden, M.K. et al.	376	O'Neill, J.R., s. Valley, J.W.	158
Gaspar, J.C., Wyllie, P.J.: The alleged kimberlite-carbonatite relationship: evidence from ilmenite and spinel from Premier and Wesselton Mines and the Benfontein Sill, South Africa	133	Pallister, J.S., s. Claesson, S. et al.	244
		Paupy, A., s. Beccaluva, L. et al.	253
		Pettingill, H.S., Sinha, A.K., Tatsumoto, M.: Age and origin of anorthositic, charnockitic, and granulites in the Central Virginia Blue Ridge: Nd and Sr isotopic evidence	279
		Presnall, D.C., s. Sen, G.	404
		Querré, G., s. Martin, H.	292
		Reymer, A.P.S., Matthews, A., Navon, O.: Pressure-temperature conditions in the Wadi Kid metamorphic complex: implications for the pan-african event in SE Sinai	336
		Roden, M.K., Hart, S.R., Frey, F.A., Melson, W.G.: Sr, Nd and Pb	

isotopic and REE geochemistry of St. Paul's Rocks: the metamorphic and metasomatic development of an alkali basalt mantle source	376	sodic amphibole: petrologic indicator of changing pressure and temperature during tectonism in the Bathurst Area, New Brunswick, Canada	311
Sack, R.O., Carmichael, I.S.E.: $\text{Fe}^{2+} \rightleftharpoons \text{Mg}^{2+}$ and $\text{TiAl}_2 \rightleftharpoons \text{MgSi}_2$ exchange reactions between clinopyroxenes and silicate melts	103	Valley, J.W., O'Neil, J.R.: Fluid heterogeneity during granulite facies metamorphism in the Adirondacks: stable isotope evidence	158
Schilling, J.-G., s. Neumann, E.-R.	209	Vasconcellos, M.B.A., s. Iyer, S.S. et al.	95
Schneider, A., s. Haack, U. et al.	116	Walker, D., DeLong, S.E.: A small Soret effect in spreading center gabbros	203
Sen, G., Presnall, D.C.: Liquidus phase relationships on the join anorthite-forsterite-quartz at 10 kbar with applications to basalt petrogenesis	404	Warhus, U., Chatterjee, N.D.: Ephesite, $\text{Na}(\text{LiAl}_2)[\text{Al}_2\text{Si}_2\text{O}_{10}](\text{OH})_2$: I. Thermal stability and standard state thermodynamic properties	74
Sinha, A.K., s. Pettingill, H.S. et al.	297	Warhus, U., s. Chatterjee, N.D.	80
Spadea, P., s. Cortesogno, L. et al.	14	Watson, E.B., s. Jurewicz, S.R.	25
Sparks, R.S.J., Huppert, H.E.: Density changes during the fractional crystallization of basaltic magmas: fluid dynamic implications	300	Wyllie, P.J., s. Gaspar, J.C.	133
Tatsumoto, M., s. Claesson, S. et al.	244	Zeck, H.P., s. Munksgaard, N.C.	67
Tatsumoto, M., s. Pettingill, H.S. et al.	279	Zhang, Z., s. Jahn, B.	224
Treiman, A.H., Essene, E.J.: A periclase-dolomite-calcite carbonate from the Oka complex, Quebec, and its calculated volatile composition	149		
Trzcinski, W.E. Jr., Carmichael, D.M., Helmstaedt, H.: Zoned			

*Indexed in Current Contents/
Abstracted in Mineralogical Abstracts*

